

complete petri dishes

Chapter 2 - Viruses, Bacteria, Protists, and Fungi

Viruses - Lesson 1

Objectives

Name and describe the characteristics of viruses and how they multiply.

Discuss both positive and negative ways that viruses affect living things.

Virus

small - but vary in size and shape

nonliving particle

can not reproduce on its own

have a protein coat that protects genetic material in core

Why are viruses considered nonliving?

Viruses are not cells.

Viruses do not use their own energy to grow.

Viruses can not make food or take in food.

Viruses can only multiply when in a living cell.

Virus Needs

Viruses need a host.

host - an organism that provides a source of energy for a virus or another organism

Virus acts like a parasite.

parasite - an organism that lives on or in a host and causes it harm

Most viruses destroy the cell in which they use.

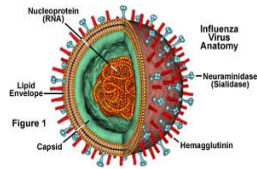
Even though the parasite lives on or in a host and causes it harm, the host usually continues to live and provide a source of energy for the parasite.

Virus Shapes

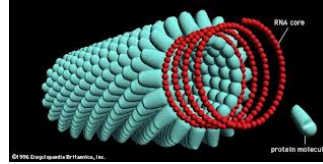
round, rod-shaped, bricks, bullets, robotlike shapes

Page 41

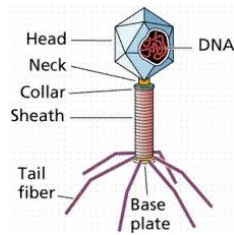
Influenza Virus



Tobacco mosaic virus



T4 bacteriophage



Assignment:

Name _____ Hour ____ Date ____

Virus

Find a virus and share the required information listed below through a visual.

5 points per requirement

- ___ name of virus
- ___ how did it get its name
- ___ shape of virus
- ___ what or who does it infect
- ___ how is it transmitted
- ___ how does it harm its host/what are the symptoms
- ___ draw a picture and color it
- ___ label the parts
 - genetic material
 - protein coat/envelope
 - surface proteins
 - or anything else you can
- ___ organized
- ___ meticulous
- ___ typed

Comments by Ms. Lowe:

Review

What two structural components are present in every virus?

protein coat
inner core of genetic material

Naming Viruses

Living organisms have the two part naming system but viruses are not living so this method is not used.

Scientists name them by the disease they cause or the area they were discovered.

How do viruses multiply?

A virus will attach itself to a host cell. Once the virus is inside, the virus releases its genetic material into the cell. The genetic material takes over the cells functions. The virus tells the cell to produce the virus's proteins and genetic material. Which when produced will develop into new viruses.

Structure of a Virus

All viruses have:
protein coat for protection
inner core that contains the genetic material
each virus contains unique surface proteins
these proteins allow viruses only attach to certain hosts

example
cold viruses attach the nose and throat cells

Page 43 Figure 4

How do Viruses interact with the Living World?

Viruses cause disease and we treat the symptoms. Colds run through the body quickly but some can be deadly.

Viruses do not just affect humans. Plants and animals can get viruses also.

Viruses are not all bad!!

Scientists use viruses to attach to cells and act as a messenger due to the proteins that attach themselves to cells.

Vaccine

may be weakened or dead viruses (because they are weakened or dead they do not cause disease) that are put into the body to produce chemicals that destroy these harmful viruses but puts your body into defense mode

how this helps is-when it enters your body it is destroyed before it can make you sick

Lesson 2 Bacteria

Objectives

- Name and describe structures, shapes, and sizes of a bacterial cell.
- Explain how bacteria obtain food, obtain energy, and reproduce.
- Describe the positive roles that bacteria play in the natural world.

What are bacteria?

Everywhere
small
prokaryotes
genetic material but not contained in a nucleus

Cell structures page 47

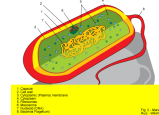
cell wall
protects

cell membrane
just inside the cell wall that controls the materials that pass in and out of a cell

cytoplasm
gel substance that allows structures to move around inside the cell contains the genetic material

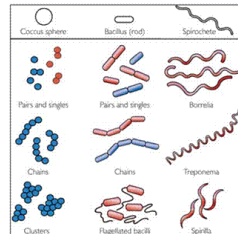
ribosomes
produces proteins

flagellum
whip-like structure that helps cell to move



Shapes

- spherical
- rodlike
- spiral



Sizes

largest is as big as a period at end of sentence

How do bacteria get food?

Autotrophs
Use sun's energy like plants
Heterotrophs

Respiration

this is not breathing
need a constant supply of energy which comes from food

cellular respiration
breaking down of food to release energy and need oxygen to do this

some do not need oxygen and will die in the presence of oxygen

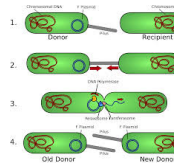
Reproduction

reproduce sexually and asexually
must have right temp., enough food and suitable conditions

asexually through a process called **binary fission**
cell divides to form two identical cells

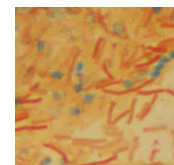
sexually

conjugation
bacterium transfers its genetic material into another bacterium, results in new combinations of genetic material, however this does not increase the number of bacteria because binary fission does this



Endospore

round, thick-walled that forms inside the cell
resist freezing, heating, and drying
they get carried away by wind, when conditions are suitable again it will open up and bacteria will reproduce again



Homework

Complete pages 46-52 in textbook.

What is the role of Bacteria in Nature?

We have talked about that when you think of bacteria you think of bad things.

Most bacteria is harmless or helpful to humans.

Oxygen Production

Some bacteria use the sun's energy to produce food and their by-product is O₂.

Scientists think that bacteria is what is responsible for the air on Earth.

Food Production

Some bacteria help to create different food but it does not have a taste.

Some bacteria will cause food to spoil.

Refrigeration and **Pasteurization** help to slow down bacteria growth.

Pasteurization

Food is heated to a temp. that will kill the bacteria and will not change the taste of the food

Health/Medicine

Bacteria produce vitamins your body needs.

Good Bacteria prevent bad bacteria from attaching to your intestines which could make you sick.

Bacteria is altered genetically to make insulin.

Environmental Cleanup

Bacteria is used to clean up oil spills by converting the poisonous chemicals into harmless substances.

Environmental Recycling

Decomposers

organisms that break down complex chemicals in dead organisms into simple compounds

natural recyclers

return chemicals back to the environment that other organisms can use

leaves

as leaves break down chemicals go into the soil to be absorbed by plants

nitrogen fixing bacteria

live in roots of certain plants

plants need nitrogen from the air but can not get it themselves, so bacteria will change nitrogen gas into nitrogen products that the plant needs

Complete pages 53 - 55. Due Tuesday.

Lesson 3

Protists

The World of Protozoa www.youtube.com/watch?v=FKf54VV8Po
30 min

Objectives
Describe the characteristics of animal-like protists and give examples.
Describe the characteristics of plant-like protists and give examples.

Protists
eukaryotes-all protists
not classified as animals, plants or fungi
live in moist environments-all protists
most unicellular but some multicellular
heterotrophs, autotrophs and some can be both
some can not move, others can

Divided into three groups

Animal-like
called **protozoans**
heterotrophs
move to get food
unicellular

Protozoans - page 58
Sarcodines
protozoans with Pseudopods
Pseudopods = "false foot"



Flagellates
protozoans with Flagella
flagella used for movement



Ciliates
cilia - hairlike projections - movement, feeding



Parasites
characterized by where they live not how they move
some have flagella and some rely on host for transportation
some use layer of slime that allows it to slide
feed on cells and body fluids of hosts



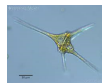
Mosquitoes simply bite to feed on your blood.
The bumps and itchiness that follow come from an anticoagulant that the mosquito injects to prevent your blood from clotting, which triggers a mild allergic reaction that includes the typical round, red bumps.

Plant-like
called **Algae**
autotrophs
unicellular/multicellular
pigments - green, yellow, red, brown, orange, or black
most make own food
help Earth by releasing oxygen to the atmosphere
source of food near the surface of ponds, lakes, oceans
vary in size

Euglenoids



Dinoflagellates



Diatoms



Red Algae



Brown Algae



Fungus-like
called "sort of like"
heterotrophs
cell walls
use spores to reproduce
able to move at some point in their life

Three Types of Fungus-like Protists

Slime Molds
colorful
live in moist, shady places
moves a mass oozing along



Water Molds



live in water or moist places
grow like threads
look like fuzz
attack food crops

Downy Mildew



will destroy crops
will not survive winter
early planting reduces mildew's chance

Assignment
Pages 61-65 in Workbook, answer all questions

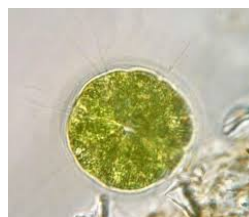
Amoeba



Paramecium



Pandorina



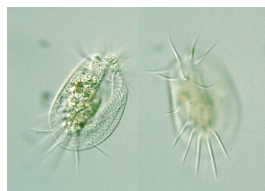
Euglena



Paranema



Euplotes



Blepharisma



Arcella vulgaris



Actinosphaerium



